

```
SetDirectory["C:\\drorbn\\AcademicPensieve\\Projects\\FreeLie"];
<< FreeLie.m
```

```
bmor = LieMorphism[{<"x"> → LieSeries[<"y">], <"y"> → LieSeries[<"z">]}]
```

```
LieMorphism$98
```

```
LieMorphism$98
```

```
BCH[7] // Last
```

$$\begin{aligned} & \frac{\langle \text{xxxxxxy} \rangle}{30\,240} - \frac{\langle \text{xxxxxyy} \rangle}{5040} + \frac{\langle \text{xxxxyxy} \rangle}{10\,080} + \frac{\langle \text{xxxxyyy} \rangle}{3780} + \frac{\langle \text{xxxxyxy} \rangle}{10\,080} + \frac{\langle \text{xxxxyxy} \rangle}{1680} + \\ & \frac{\langle \text{xxxxyxy} \rangle}{1260} + \frac{\langle \text{xxxxyyy} \rangle}{3780} + \frac{\langle \text{xyxyxyy} \rangle}{2016} - \frac{\langle \text{xyxyxyy} \rangle}{5040} + \frac{13 \langle \text{xyxyxyy} \rangle}{15\,120} + \frac{\langle \text{xyxyxyy} \rangle}{10\,080} - \\ & \frac{\langle \text{xyxyxyy} \rangle}{1512} - \frac{\langle \text{xyxyxyy} \rangle}{5040} + \frac{\langle \text{xyxyxyy} \rangle}{1260} - \frac{\langle \text{xyxyxyy} \rangle}{2016} - \frac{\langle \text{xyxyxyy} \rangle}{5040} + \frac{\langle \text{xyxyxyy} \rangle}{30\,240} \end{aligned}$$

```
bmor[BCH[7] // Last]
```

$$\begin{aligned} \text{LieSeries}\left[0, 0, 0, 0, 0, 0, \frac{\langle \text{yyyyyyz} \rangle}{30\,240} - \frac{\langle \text{yyyyyzz} \rangle}{5040} + \frac{\langle \text{yyyyzyz} \rangle}{10\,080} + \frac{\langle \text{yyyyzzz} \rangle}{3780} + \frac{\langle \text{yyyzyyz} \rangle}{10\,080} + \right. \\ \left. \frac{\langle \text{yyyzyyz} \rangle}{1680} + \frac{\langle \text{yyyzyyz} \rangle}{1260} + \frac{\langle \text{yyyzzzz} \rangle}{3780} + \frac{\langle \text{yyzyyzz} \rangle}{2016} - \frac{\langle \text{yyzyzyz} \rangle}{5040} + \frac{13 \langle \text{yyzyzzz} \rangle}{15\,120} + \right. \\ \left. \frac{\langle \text{yyzyyzz} \rangle}{10\,080} - \frac{\langle \text{yyzzzyz} \rangle}{1512} - \frac{\langle \text{yyzzzzz} \rangle}{5040} + \frac{\langle \text{yzyzyzz} \rangle}{1260} - \frac{\langle \text{yzyzzzz} \rangle}{2016} - \frac{\langle \text{yzzzyzz} \rangle}{5040} + \frac{\langle \text{yzzzzzz} \rangle}{30\,240} \right] \end{aligned}$$

```
bmor[<"xxxxxxy">]
```

```
LieSeries[0, 0, 0, 0, 0, 0, <yyyyyyz>]
```

```
bmor[Cases[BCH[7] // Last, _LW, Infinity]]
```

```
{LieSeries[0, 0, 0, 0, 0, 0, <yyyyyyz>], LieSeries[0, 0, 0, 0, 0, 0, <yyyyyzz>],
LieSeries[0, 0, 0, 0, 0, 0, <yyyyzyz>], LieSeries[0, 0, 0, 0, 0, 0, <yyyyzzz>],
LieSeries[0, 0, 0, 0, 0, 0, <yyyzyyz>], LieSeries[0, 0, 0, 0, 0, 0, <yyyzyyz>],
LieSeries[0, 0, 0, 0, 0, 0, <yyyzzzz>], LieSeries[0, 0, 0, 0, 0, 0, <yyzyyzz>],
LieSeries[0, 0, 0, 0, 0, 0, <yyzyzyz>], LieSeries[0, 0, 0, 0, 0, 0, <yyzyzzz>],
LieSeries[0, 0, 0, 0, 0, 0, <yyzzzyz>], LieSeries[0, 0, 0, 0, 0, 0, <yyzzzzz>],
LieSeries[0, 0, 0, 0, 0, 0, <yzyzyzz>], LieSeries[0, 0, 0, 0, 0, 0, <yzyzzzz>],
LieSeries[0, 0, 0, 0, 0, 0, <yzzzyzz>], LieSeries[0, 0, 0, 0, 0, 0, <yzzzzzz>]}
```

```
Total[Take[bmor[Cases[BCH[7] // Last, _LW, Infinity]], 15]]
```

```
LieSeries[0, 0, 0, 0, 0, 0, <yyyyyyz> + <yyyyyzz> + <yyyyzyz> +
<yyyyzzz> + <yyyzyyz> + <yyyzyyz> + <yyyzzzz> + <yyzyyzz> +
<yyzyzyz> + <yyzyzzz> + <yyzzzyz> + <yyzzzzz> + <yzyzyzz> + <yzyzzzz>]
```